Small Business Innovation Research/Small Business Tech Transfer

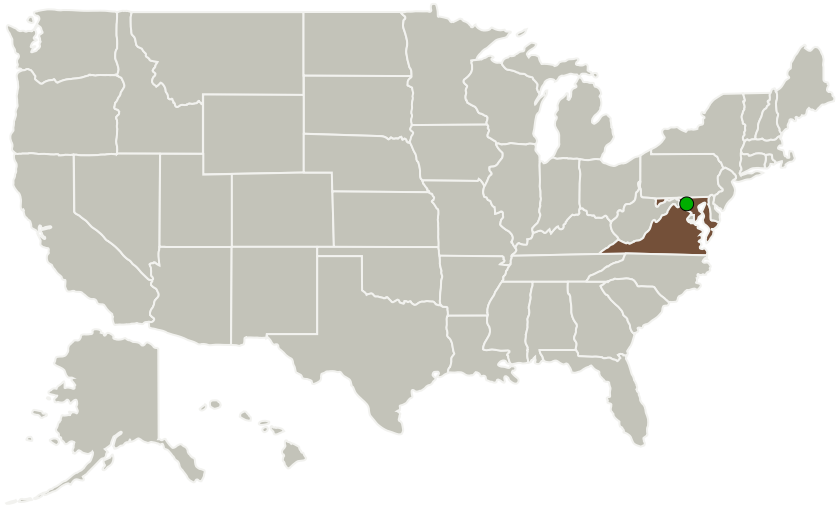
3D Imaging Cubesat Lidar for Asteroid and Planetary Sciences, Phase I

Completed Technology Project (2015 - 2015)

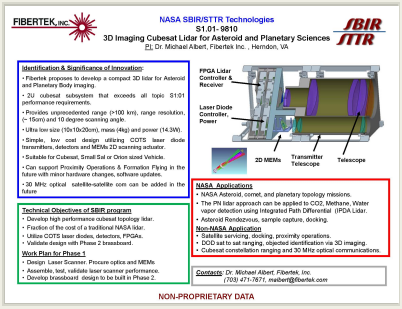
Project Introduction

NASA is actively pursuing guidance and control light detection and ranging (lidar) systems for upcoming exploration missions including asteroid, comet, planet, and planetary moons of Jupiter and Saturn. Fibertek proposes to develop a scanning 3D imaging photon-counting cubesat lidar capable of topology and rendezvous over ranges from 1 to >100 km range at a fraction of the power, mass, and cost of the Mercury Laser Altimeter. 2U cubesat subsystem that exceeds all topic S1:01 performance requirements. The lidar provides unprecedented range (>100 km), range resolution, (~ 15cm) and 10 degree scanning angle in an ultra low size (10x10x20cm), mass (4kg) and power (14.3W) in a 2U size suitable for Cubesat, Small Sal or Orion sized vehicle. The lidar can support Proximity Operations & Formation Flying in the future with minor hardware changes, software updates. Optical satellite to satellite communications can be added to the lidar in the future under Phase IIE or Phase III support.

Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Fibertek, Inc.	Lead Organization	Industry	Herndon, Virginia
Goddard Space Flight Center(GSFC)	Supporting Organization	NASA Center	Greenbelt, Maryland



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Primary U.S. Work Locations	
Maryland	Virginia

Project Transitions

June 2015: Project Start

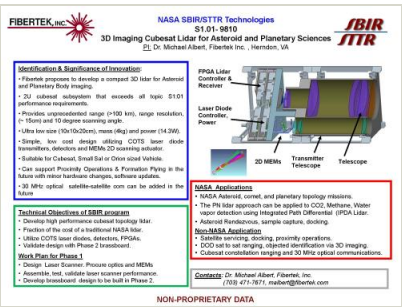
December 2015: Closed out

Closeout Summary: 3D Imaging Cubesat Lidar for Asteroid and Planetary Scie nces, Phase I Project Image

Closeout Documentation:

- Final Summary Chart Image*(https://techport.nasa.gov/file/138715)*

Images



Briefing Chart Image
3D Imaging Cubesat Lidar for Asteroid and Planetary Sciences, Phase I
(https://techport.nasa.gov/image/131500)

Organizational Responsibility

Responsible Mission Directorate:
Space Technology Mission Directorate (STMD)

Lead Organization:
Fibertek, Inc.

Responsible Program:
Small Business Innovation Research/Small Business Tech Transfer

Project Management

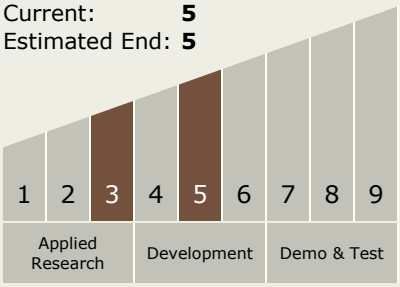
Program Director:
Jason L Kessler

Program Manager:
Carlos Torrez

Principal Investigator:
Michael Albert

Technology Maturity (TRL)

Start: **3**
Current: **5**
Estimated End: **5**



3D Imaging Cubesat Lidar for Asteroid and Planetary Sciences, Phase I

Completed Technology Project (2015 - 2015)

Technology Areas

Primary:

- TX08 Sensors and Instruments
  - TX08.1 Remote Sensing Instruments/Sensors
    - TX08.1.5 Lasers

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System